ivy, are to a great extent under the control of light.

A few other plants of the same species were trained in each of the preceding methods; but proper objects were placed, in different situations near them, with which their tendrils might come into contact; and I was by these means afforded an opportunity of observing, with accuracy, the difference between the motions of these and those of the ampelopsis, under similar circumstances. The latter almost immediately receded from light, by whatever means that was made to operate upon them: and they did not subsequently show any disposition to approach the points from which they once receded. The tendrils of the vine, on the contrary, varied their positions in every period of the day, and after returned again during the night to the situations they had occupied in the preceding morning; and they did not so immediately or so regularly bend towards the shade of contiguous objects. But as the tendrils of this plant, like those of the ampelopsis, spring alternately from each side of the stem, and as one point only in three is without a tendril, and as each tendril separates into two divisions, they do not often fail to come into contact with any object within their reach; and the effects of contact upon the tendril are almost immediately visible. It is made to bend towards the body it touches, and, if that body be slender, to attach itself firmly by twining round it, in obedience to causes which I shall endeavour to point out.

The tendril of the vine, in its internal organization, is apparently similar to the young succulent shoot, and leaf-stalk, of the same plant; and it is as abundantly provided with vessels, or passages, for the sap; and I have proved that it is alike capable of feeding a succulent shoot, or a leaf, when grafted upon it. It appears, therefore, I conceive, not improbable, that a considerable quantity of the moving fluid of the plant passes through its tendrils; and that there is a close connection between its vascular structure and its motions.

I have proved in the Philosophical Transactions of 1806, that centrifugal force, by operating upon the elongating plumules of germinating seeds, occasions an increased growth and extension upon the external sides of the young stems, and that gravitation produces correspondent effects; probably by occasioning the presence of a larger portion of the fluid organizable matter of the plant upon the one side than upon the other. The external pressure of any body upon one side of a tendril will probably drive this fluid from one side of the tendril, which will consequently contract, to the opposite side, which will expand; and the tendril will thence be compelled to bend round a slender bar of wood or metal, just as the stems of germinating seeds are made to bend upwards, and to raise the cotyledons out of the ground; and in support of this conclusion I shall observe, that the sides of the tendrils, where in contact with the substance they embraced, were compressed and flattened.

The actions of the tendrils of the pea were so perfectly similar to those of the vine, when they came into contact with any body, that I need not trouble you with the observations I made upon that plant. An increased extension of the cellular substance of the bark upon one side of the tendrils, and a correspondent contraction upon the opposite side, occasioned by the operation of light, or the partial pressure of a body in contact, appeared in every case, which has come under my observation, the obvious cause of the motions of tendrils; and therefore, in conformity with the conclusions I drew in my last memoir, respecting the growth of roots, I shall venture to infer, that they are the result of pure necessity only, uninfluenced by any degrees of sensation or intellectual powers.

Process for making artificial Stone for Chimney-pieces, as a substitute for Portland Stone; by Charles Wilson, 35 Worcester-street, Borough.

[From the Transactions of the Society for the Encouragement of Arts, Manufactures, and Commerce.]

Twenty-five guineas were voted by the Society for this invention.

Take two bushels of sharp drift sand, and one bushel of sifted slacked quick-lime, mix them up together with as little water as possible, and beat them well up together for half an hour, every morning for three or four successive days, but never wet them again after their first mixture.

To two gallons of water, contained in a proper vessel, add one pint of single size, made warm; a quarter of a pound of allum, in powder, is then to be dissolved in warm water, and mixed with the above liquor.

Take about a shovel-full of the first

composition, make a hole in the middle of it, and put therein three quarters of a pint of the mixture of allum and size, to which add three or four pounds of coarse plaster of Paris;* the whole is to be well beaten, and mixed together rather stiff; put this mixture into the wooden moulds of your intended chimney-piece; the sides, ends, and tops of which moulds are, made of moveable pieces, previously oiled with the following mixture.

Take one pint of the droppings of sweet oil, which costs about 1s. the pint, and add thereto one pint of clear lime-water, made from pouring boiling-water on lumps of chalk-lime, in a close vessel, till fully saturated; when the lime water becomes clear, it is proper to be added to the oil as above-mentioned, and on their being stirred together they will form a thick oily mixture, or emulsion, proper to apply upon the moulds.

In forming the side or jamb of a chimney-piece, the mould is to be first half filled with the sand lime and plaster composition, then two wires wrapped round with a thin layer of hemp, and which wires are nearly the length of the piece to be moulded, are to be placed in parallel lines, lengthwise, in the mixture or composition in the mould, and afterwards the mould is filled up with more of the composition, and if there is any superfluous quantity, it is to be struck off with a piece of flat board.

The lid or top part of the mould is to be then placed upon it, and the whole subjected to a strong pressure from weighted levers, or a screw press. The composition is to remain under this pressure for twenty or thirty minutes; the precise time necessary may be known, from examining a small specimen of the composition reserved purposely to determine the time it requires to harden and set firm.

The sides of the mould are to be held together by iron clamps and wedges.

The wires above-mentioned answer a double purpose, by giving strength to the jambs, and retaining the whole mass together, in case it should at any time be cracked by accident.

The chimney-pieces may be made either plain or fluted, according to the mould; and when moulded, they are finished off by rubbing them over with allum water, and smoothing them with a trowel and a little wet plaster of Paris.

A common plain chimney-piece of this composition is sold at only seven shillings, and a reeded one at twenty-eight shillings, completely fitted up.

* Gypsum, or alabaster, an article found in abundance in the neighbourhood of Belfast. B.M.M.

On the Decolouration of Vinegar, and a new process for depriving this Acid, and other Vegetable Liquids, of their colour, by means of Animal Charcoal; by M. Figuier.

[From the Annales de Chimie.]

Of all the vegetable acids, that which bears the name of vinegar, is without dispute the most anciently known, and the most useful; the facility with which it is prepared, and the means we have of procuring it in large quantities, at a very moderate price, in almost every country, are causes that have multiplied its use both in domestic economy, and in the arts. It is one of the principal constituents of a great number of chemical and pharmaceutical preparations.

The physician employs it usefully in many disorders; and the perfumer, distiller, and confectioner, each find it necessary in several of their operations.

The sale of this article forms a considerable branch of commerce in France, and to improve the mode of obtaining it, to purify it, and to extend its use, has excited the ingenuity of a number of chemists and other persons.

Being occupied with a series of experiments, in which my object was to deprive of colour some vegetable liquors, by means of charcoal, I have been led to furnish the society with a method of depriving this acid of colour, which, if I do not deceive myself, will greatly contribute to give it a higher price, and to improve its properties.

We know, that vinegar made from wine is preferable to that obtained by fermentation from other vegetable substances. It is of this first that I now speak. In commerce, two kinds of vinegar are known, the red and the white. The first proceeds from the acidification of red wine, the second from that of white wine; the last is most esteemed, because it contains less of extractive colouring-matter than the red, for which reason we endeavour to take from the latter a portion of this colouring matter, in order to bring it nearer in quality to the white; which we also deprive